

Freight Rail: A Responsible Choice for LNG Movements

In 1971, the U.S. Department of Transportation (USDOT) published a Notice of Proposed Rulemaking (NPRM) to authorize the transportation of methane, refrigerated liquid, more commonly known as liquefied natural gas (LNG) by rail. However, that proposed rule was never finalized due to lack of demand for rail transportation — not a determination that rail was an unsuitable mode for transporting LNG.

Recently, another shift in energy markets has generated demand for LNG domestically and internationally, and the transportation of LNG by rail in limited quantities is now needed where pipeline capacity is insufficient. To meet this demand — Transport Canada, the USDOT's Canadian counterpart — recently authorized the safe transportation of LNG by rail. In January 2017, the AAR filed a petition with the Pipeline and Hazardous Materials Safety Administration (PHMSA) seeking the ability to transport LNG by rail.

PHMSA's rulemaking permits safe transport of LNG by rail.

In June 2020, following extensive consideration and public comment, PHMSA and the Federal Railroad Administration (FRA) published a final rule authorizing the transportation of LNG by rail and outlining stringent measures to ensure its safety, including:

- **Improved Tank Cars:** The final rule requires the transportation of LNG in DOT-113 tank cars, which have a proven safety record throughout their 50 years of service. For LNG shipments, DOT-113s will be further enhanced with thicker outer shells aimed at making them more puncture-resistant. These specialized tank cars are double-hulled, vacuum-insulated cars designed to monitor and maintain proper pressure and temperature for cryogenic liquids similar to LNG. The USDOT also recently conducted two successful impact tests on these tank cars.
- **Advanced Route Analysis:** Class I railroads use the Rail Corridor Risk Management System (RCRMS) — a joint initiative between the railroads and government — to analyze and identify the safest, most secure routes for transporting LNG and other highly hazardous materials (hazmat). RCRMS weighs 27 risk factors, including hazmat volume, trip length, and population density, to assess the overall safety and security of rail routes.
- **Enhanced Operations and Equipment:** Railroads equip trains carrying hazmat with specialized equipment, including distributed power and end-of-train devices, which further minimize the potential for damage to rail cars.

Rail is the responsible choice for moving hazmat and LNG.

For more than 80 years, railroads have safely shipped cryogenic liquids similar to LNG, such as liquefied oxygen, ethylene, and hydrogen chloride. However, until recently, railroads were required to obtain special permits from USDOT to transport LNG even though rail has a stronger safety record on hazmat movements than the commercial trucking industry which has been permitted to transport the product on our nation's roads and highways for more than 50 years. Rail is an extremely safe way to move hazmat and is much safer than trucks. According to USDOT data, the truck hazmat incident rate is more than 13 times higher than the rail rate.

With over \$26 billion in annual private investments to improve track and equipment reliability as well as develop and implement new safety technologies, the rail industry has lowered hazmat accident rates by 64% since 2000. As a result, more than 99.99% of the roughly 2.3 million carloads of hazmat moved by rail each year reach their destination without a release caused by a train accident.

Key Takeaways

- For more than 80 years, railroads have safely transported cryogenic liquids similar to LNG.
- More than 99.99% of rail hazmat shipments reach their destination without a release caused by a train accident.
- Rail is undeniably safer than current over-the-road transportation of hazmat. According to USDOT data, the truck hazmat incident rate is more than 13 times higher than the rail rate.
- In recent years, railroads have reinvested an average of more than \$26 billion per year in private capital in their infrastructure and equipment, helping the industry achieve its safest decade ever.